



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/827,106	04/05/2001	Pei-Haw Tsao	67,200-344	5011

7590 02/13/2002

TUNG & ASSOCIATES  
838 W. Long Lake Road, Suite 120  
Bloomfield Hills, MI 48302

EXAMINER

VU, HUNG K

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 02/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/827,106

Applicant(s)

TSAO ET AL.

Examiner

Hung K. Vu

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 11-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 11, line 4, a phrase "said plurality of BGA package substrates" lacks of antecedent basis.

In claim 11, lines 3-4, a phrase "each one of said plurality of BGA package substrates" is unclear as to whether there are a plurality of BGA package substrates.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-2 and 4-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Huang et al. (PN 6,319,750).

Art Unit: 2811

Huang et al. discloses a matrix form semiconductor package substrate having an electrode situated in-between a plurality of integrated circuit (IC) package substrates for providing electrical communication to conductive pads situated on the substrate comprising,

A plurality of IC package substrates (210a,210b,310a,310b) integrally formed on a substrate strip in a matrix form having a boundary between each two of the plurality of IC package substrates, each of the plurality of IC package substrates having a multiplicity of conductive pads;

An electrode (220,320) formed in a serpentine configuration along the boundary for providing electrical communication to the multiplicity of conductive pads and for providing insulation between the multiplicity of conductive pads after the plurality of IC packages are cut along the boundary through the electrode. Note Figures 1-3 of Huang et al..

With regard to claims 2, 14, and 15, Huang et al. discloses the electrode being a plating bar formed of an electrically conductive material. Note that the term "in an electroplating process" is method recitation in a device claimed, and it is non-limiting, because only the final product is relevant, not the method of making. A product by process claim is directed to the product per se, no matter how actually made. See also MPEP 2113. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claimed in "product by process" claims or not.

With regard to claim 4, Huang et al. discloses the plurality of IC package substrates being at least four IC package substrates arranged in a matrix form.

Art Unit: 2811

With regard to claim 5, Huang et al. discloses the matrix form semiconductor substrate being for a ball grid array package.

With regard to claim 6, Huang et al. discloses the plurality of IC package substrates integrally formed in such a way that traces on adjacent package substrates at corresponding opposite positions are connected together by the electrode.

With regard to claim 7, Huang et al. discloses the multiplicity of conductive pads being connected electrically to a multiplicity of wirebond fingers by a multiplicity of traces.

With regard to claim 8, Huang et al. discloses the electrode being formed in a corrugated configuration.

With regard to claims 9, 12, and 13, Huang et al. discloses the electrode being formed in a corrugated configuration with each one of two legs of a corrugation connected to an oppositely positioned IC package substrates.

With regard to claim 10, Huang et al. discloses the electrode provides electrical communication to the multiplicity of conductive pads by electrically connecting to a plating bath.

Art Unit: 2811

With regard to claim 16, Huang et al. discloses the device further comprising a plurality of solder balls (not shown) formed on a bottom surface of the BGA package substrate.

3. Claims 1-2, 4-13, and 15-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Chiu et al. (PN 6,121,678).

Chiu et al. discloses a matrix form semiconductor package substrate having an electrode situated in-between a plurality of integrated circuit (IC) package substrates for providing electrical communication to conductive pads situated on the substrate comprising,

A plurality of IC package substrates (42) integrally formed on a substrate strip in a matrix form having a boundary between each two of the plurality of IC package substrates, each of the plurality of IC package substrates having a multiplicity of conductive pads (58);

An electrode (48) formed in a serpentine configuration along the boundary for providing electrical communication to the multiplicity of conductive pads and for providing insulation between the multiplicity of conductive pads after the plurality of IC packages are cut along the boundary through the electrode. Note Figures 1-7 of Chiu et al..

With regard to claims 2 and 15, Chiu et al. discloses the electrode being a plating bar formed of an electrically conductive material. Note that the term “in an electroplating process” is method recitation in a device claimed, and it is non-limiting, because only the final product is relevant, not the method of making. A product by process claim is directed to the product per se, no matter how actually made. See also MPEP 2113. Moreover, an old or obvious product produced

Art Unit: 2811

by a new method is not a patentable product, whether claimed in "product by process" claims or not.

With regard to claim 4, Chiu et al. discloses the plurality of IC package substrates being at least four IC package substrates arranged in a matrix form.

With regard to claim 5, Chiu et al. discloses the matrix form semiconductor substrate being for a ball grid array package.

With regard to claim 6, Chiu et al. discloses the plurality of IC package substrates integrally formed in such a way that traces on adjacent package substrates at corresponding opposite positions are connected together by the electrode.

With regard to claim 7, Chiu et al. discloses the multiplicity of conductive pads being connected electrically to a multiplicity of wirebond fingers by a multiplicity of traces (50).

With regard to claim 8, Chiu et al. discloses the electrode being formed in a corrugated configuration.

With regard to claims 9, 12, and 13, Chiu et al. discloses the electrode being formed in a corrugated configuration with each one of two legs of a corrugation connected to an oppositely positioned IC package substrate.

Art Unit: 2811

With regard to claim 10, Chiu et al. discloses the electrode provides electrical communication to the multiplicity of conductive pads by electrically connecting to a plating bath.

With regard to claim 16, Chiu et al. discloses the device further comprising a plurality of solder balls (not shown) formed on a bottom surface of the BGA package substrate.

With regard to claims 17 and 18, Chiu et al. discloses the serpentine configuration having an amplitude between about 0.3 mm and about 5 mm.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (PN 6,319,750).

With regard to claim 3, Huang et al. discloses all of the claimed limitations except the material of the plating bus. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the plating bus of Huang et al.'s having the materials as that claimed by Applicant, since it has been held to be within the general skill of a worker in the

Art Unit: 2811

art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

With regard to claims 17-18, although Huang et al. does not teach the exact the amplitude of the serpentine configuration, as that claimed by Applicants, however, the amplitude differences are considered obvious design choices and optimization that one skill in the art would be considered as obvious.

5. Claims 3 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu et al. (PN 6,121,678).

Chiu et al. discloses all of the claimed limitations except the material of the electrode or the plating bus. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the electrode or the plating bus of Chiu et al.'s having the materials as that claimed by Applicant, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung K. Vu whose telephone number is (703) 308-4079. The examiner can normally be reached on Mon-Thurs 7:00-5:30, Eastern Time.

Art Unit: 2811


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Vu

February 8, 2002

Steven Locke  
Primary Examiner

A handwritten signature in cursive script that reads "Steven Locke".